Saskatchewan
Agriculture, Food
and Rural
Revitalization

ADF

AGRICULTURE DEVELOPMENT FUND

FINAL REPORT

20000164

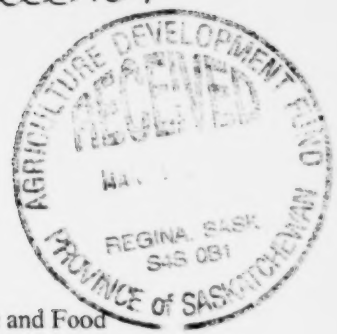
INCREASING BATCH SIZES AND LABEL DEVELOPMENT

Funded by: Agriculture Development Fund

March 2001

Prepared by: M & M Garlic

20000164



M&M GARLIC

Increasing Batch Sizes and Label Development

M&M Garlic received funding from the Saskatchewan Department of Agriculture and Food (SDAF) in the fall of 2000-2001 to increase brine batch sizes and develop a label.

The large batches brought up new hurdles involving the time required to prepare the garlic, quality and quantity of the brine, and the effectiveness of the jars sealing. The labels developed were very simple with a white background.

The funding aided in overcoming the problems involved with pickling garlic on a large scale. The white, uncluttered image of the labels impacted the idea of garlic – natural, simple and healthy.

Background

M&M Garlic is a small company that started with 16kg of garlic 5 years ago. With ambitions to sell bulk and seed garlic, some was sold each year keeping some back, and slowly building up inventory of their own seed.
Over the past 4 years, there was a realization that added value products could increase profits from the raw garlic. Small scale pickling production started just over a year ago. Response was good in the immediate area. With some encouragement from this response, it was hopeful to expand pickling amounts in the fall. The SDAF believed in the idea as well and provided funding for some of the expenses to increase batch sizes.

Project Objectives

In the early stages of the project, it was hopeful to have 450 kg of garlic to pickle. This changed to a smaller quantity because of the need for seed for the next growing season. The cool temperatures in the spring proved to be a drawback in the amount available to be harvested.
It was intended to increase the batches up to 60 L on each recipe. There were modifications in this due to difficulty controlling the temperature of the kettles.
M&M Garlic wanted a unique label that stood out. The idea of bright, vibrant colours was appealing, but being that the sales pitch of the business is simple, healthy garlic, a simple, clean two-colour label was chosen.

Observations

Peeling and preparing the garlic for pickling was a very large job. Initially, the hard stub ends on the garlic cloves were taken off. On successive trials, this was not as closely monitored. These stubs softened over time, and were not as noticeable in the mouth. The garlic could not be stored for long times – it was decided that 48 hours at 4-5C was the maximum time before pickling or there was a large amount that went soft. It took many man-hours within two days to get enough garlic to pickle for two days at the Food Centre. This was the largest cost involved for the project.

The funds from the SDAF were of great assistance for brine development. There was never enough confidence to jump up the brine amounts to 60 L as was hoped. There were big differences in the brine recipes that caused no two results to be the same. The heat couldn't be controlled well enough to allow a good pickle to be made. The following will describe the variances in recipe outcomes.

CRUNCHIE
This brine contained a lot of sugar. In some of the small home batches that were made, the garlic was warmed in the brine. Some of the garlic seemed to soak up more spices than other garlic. This was tried with the large batches at the kitchen, but the same outcome was to be had. It had to be monitored closely, as it seemed to scorch and leave a bad taste in the garlic.
This recipe had the highest amount of unsealed jars after processing. It was believed to be due to the cold temperature of the raw garlic. Batches were consequently heated prior to processing since so many had not sealed.

SWEET RED PEPPER

The largest problem found with this recipe was that the brine turned murky for the last litre of brine in the pot. The red pepper was warmed too long and the colour ran from it into the brine leaving milky looking brine.

The spices were not increased proportionately in the first day of pickling. In the small home batches one tea ball held the spices. The large batches didn't seem to get enough of the flavour out of the tea ball. The intention was that there maybe some cost cutting advantages. Instead of one tea ball, there were three, but even so, the flavour did not come through. Following that, the spices were increased and added directly to the brine, and it enhanced the look of the brine.

DILL AND SALTY HOT BRINES

This recipe was done on an individual jar basis prior to using the kitchen at the food centre. The first day, the brine we tried in the kettle had a high pH, and was very salty. The brine had such a large quantity of salt that the vinegar would not boil at 100C. A lot of the brine evaporated and left salt in the bottom of the kettle.

On subsequent batches, there were changes made to the recipe, which lowered the pH and produced an excellent pickle with dill or hot spicy flavouring.

Conclusions

With the help of the SADF funding and the kitchen at the Food Centre, there is now a possibility of expansion in the pickled garlic market for M&M Garlic.

The cleaning process is an expense that has to be looked at by any processors. It was a very labour intensive step.

Increasing brine ingredients was not that difficult. Most ingredients could be increased proportionately, but process was important. Heating the raw garlic was an additional step that turned out to fix more than one problem.

The employees attended the Food Steps course offered by the Food Centre. It was explained there that microorganisms could not survive above 60C. On the batches that were heated to 84C, microorganisms were destroyed, possibly producing a more stable product. This fact would have been a time saver for the company, and thus it is recommended that the course be offered to anyone using the kitchen and new to the food processing business.

The green colouring that appeared in the garlic was somewhat of a concern even though it only affects appearance, and not taste or health. There are products that can be added to stop the enzymes from reacting and stop the green. When the garlic was heated, however, the green colour decreased dramatically. That was a positive outcome, since M&M want to avoid addition of anything that may make customers wary of buying the pickles.

The brines used and developed had excellent pH levels. With that and the heating process used, it is hoped that the shelf life will be extended, and crunchiness maintained. The label that was developed with SDAF funds is legally printed, following all of the Canadian Food and Safety Council regulations. The white crisp look achieved was excellent for the pickles. The one drawback was the thermo transfer ink that rubs off if the jars are bumped together. By using dividers between the jars, the labels say clean and fresh looking.

SDAF funds allowed M&M to develop new techniques in the pickling process that has bettered the final product. The label development is something that has always been on the drawing board, and now with the plates developed, there will be no problem accessing more labels.

Personnel

Funds were provided for Vince Neiser at the Food Centre. He assisted some in the kitchen at the start of the project. He was paid $25 per day that we required his assistance, which came to a total of $100. He was very helpful with the thermo transfer label usage.
Funds were not discussed about for the Food Steps preparation course. The course cost $50 for each employee, for a total of $100. They are being included in the expense statement since it would have been something employees from this company would have wanted if they had been aware of it. Catherine Folkerson informed us of the course on our final day of pickling in February. It was never brought to the attention of M&M before this.

Project Developed Materials

Terry Ross at CCL label in Saskatoon helped develop the labels that are being used. The basic layout was done with his help and the product name and ingredients are being done at the Food Centre on the thermo transfer printer.

M & M GARLIC
Where garlic is Natural

Dave & Krista McBain • White Fox, SK • S0J 3B0 • Ph: (306) 276-2518

Ingredients:

Garlic, vinegar, water, salt, sugar, jalepeno, spices

250 ml

Refrigerate after opening

M & M GARLIC
Where garlic is Natural

Hot & Salty
Pickled Garlic

Ail marines, sel piquant

Dave & Krista McBain • White Fox, SK • S0J 3B0 • Ph: (306) 276-2518

Ingredients:

Ail, vinaigre, eau, sel, sucre, piment vert, epices

250 ml

Refrigerer apres ouverture

Acknowledgement

M&M Garlic is very grateful to the SDAF funding. With the knowledge gained in the project, there will be bigger batches done this fall.
A commercial kitchen is being looked at in a closer vicinity to the garlic field to reduce costs. Hopefully, with somewhat lower inputs, a large capacity can be produced this fall.
Thanks to SDAF, it can be shown how Saskatchewan has the potential to grow some of the best garlic in the world and produce great pickles.

20000164

AGRICULTURE DEVELOPMENT FUND
RECEIVED
REGINA, SASK
PROVINCE of SASKATCHEWAN

Progress Reports

November 14

Being unsure of the kitchen and the appliances, only one day was booked with the hope that there would be 45 kg of garlic cleaned for the day.

The cleaning process took longer than expected. Only 27 kg was ready for the day.

The kettles were large enough to do many times larger than the size of brine batch that were being done, however, the flavour was different from the beginning to the end of the batch. The brine was not sweet enough for the Sweet Red Pepper or the Crunchie brine close to the end of the batch. It was questionable about the amount of spices to be added. Using only one tea ball to hold all of them may have to be adapted in the future.

The dill was done on a very small batch size. There was no recipe adapted yet to use at the kitchen. The pH was too high on the brine that was made and it was very salty. The crunchie brine was good until the end of the batch as it seemed to lose its sweetness. .

The other problem with the Crunchie was unsealed jars. The garlic that had been in the cooler or left at room temperature for awhile, was cooling the brine down too much, and proving to be a hindrance in the sealing process.

The heat of the kettle was adjusted using a valve and there was no thermometer to read the actual temperature of the brine as it was sitting. It was difficult to keep the brine at the correct temperature and proved to be a reason for unsealed jars as well. Sometimes the brine was too hot, and there was a lot of evaporation of vinegar, so the volume of brine available was limited.

The size of the brine was increased to a maximum of 12 L on only the crunchie brine. The other brines were not increased as much as there was uncertainty amongst the employees if there would be the same taste. The consistency was not in the brines as it had been for small batches. There will be more sugar added in following trials. More spice balls will be used to allow for more flavour to be released, as there will be more surface area exposed amongst the spices.

November 21 & 22

The first day, only Crunchie was made. The batches were increased to a 6L-volume size, and that required approximately 13.5 kg of garlic.

The garlic was heated in the brine for the first few trials. The colour of the turmeric seemed to saturate the garlic that was taken out first, and by the end of the brine, there was less salt and sugar left in the brine.

The method was changed to heating the garlic in water versus the brine, and at 50C for one minute in the water, there were less unsealed jars.

On the second day, Sweet Red Pepper brine was made. The spice balls were not keeping the spices in, as the holes were too large. The brine appeared to be more attractive with the spices floating, so the spices were added directly to the brine. There was and abundance of the spice at the end of the batch, and some were discarded. There will be jars held for future taste tests to see if that many spices needed to be added.

December 6 & 7

On the 6th, the water bath was increased to 60C for the Crunchie, and after the second batch, there were still unsealed jars in the first batch.

Moving on to Dill brine, the water bath was increased to 84C. Consequently, the amount of unsealed jars was now close to zero.

The Dill recipe that had been used the first pickling day was not successful, as there was so much salt the boiling temperature was lowered causing a lot of evaporation. This recipe had been good for one jar at a time only, so some adaptations were made. The pH was good on the new brine, and the taste was excellent.

The next day, the unsealed Crunchie had more hot brine added to raise the level in the jars and then processed in hot water. This caused the garlic to be not as crunchy as it had been. The brine also seemed to be greener and not yellow as it had been.

The garlic had a tendency to turn green when it wasn't heated first, so the Sweet Red Pepper was heated, as was the pepper. The brine turned murky when the red pepper was heated in the brine, and it was losing colour when heated in the water bath. It was then added to the garlic after it had been in the water bath, and caused no problem with sealing.

December 13 & 14
Dill and Hot Pepper brines were made on both days and to ensure consistency of flavour from the first 250ml to the last, the brine was boiled for 5 minutes. There was a constant reading being kept with a thermometer since the salt level was high enough that it was difficult to tell if the brine was at boiling temperature or not. The salt level was decreased some as it was very salty, and would cut some cost. Attempts were made to boil more than 70 jars at a time, but the jars on the bottom of the kettle got so hot there were bottoms breaking out of the jars. It was decided that the maximum jars boiled would be 75 to ensure safety and still keep jars hot enough to seal.

February 2
Using the Salty Hot Pepper recipe, the peppers were dried not fresh. They weren't boiled in with the garlic, and did not cause a problem with sealing. The brine was increased to 10L volume and the final product proved to be very successful, since the brine was not cloudy from the peppers, and the spices floating in the brine were attractive.